Notice of Allowability	Application No.	Applicant(s)	
	10/722,879	ANGLIN ET AL.	
	Examiner	Art Unit	
	Mark Ruthkosky	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *7/13/2007*.

2. ☐ The allowed claim(s) is/are *13-18,20-35 and 37-41*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

9/7/07

Mark Ruthkosky
Primary Patent Examiner
Art Unit 1745

DETAILED ACTION

Double Patenting

The rejection of claims 13-21, 23, 38-40 and 42-52 on the ground of nonstatutory double patenting over claims 1-13 of U. S. Patent No. 7,094,494 has been overcome by the timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d).

Claim Rejections - 35 USC § 103

The rejection of claims 13-52 under 35 U.S.C. 103(a) as being unpatentable over Kelemen et al. (US 6,081,992) in view of Shkuratoff (CA 2,165,152,) and further in view of Takashi JP 09-259,842) has been overcome by applicants amendment to the claims.

The rejection of claims 48 and 51 under 35 U.S.C. 103(a) as being unpatentable over Kelemen et al. (US 6,081,992) in view of Shkuratoff (CA 2,165,152,) and Takashi (JP 09-259,842.), as applied, and further in view of Shelekhin et al. (US 6,780,539) has been overcome by applicants amendment to the claims.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee. The non-elected claims are canceled in order to allow the elected, amended claims of record.

The application has been amended as follows:

Please cancel nonelected claims 1-12 and 53-79.

Allowable Subject Matter

Claims 13-18, 20-35 and 37-41 are allowed.

The following is an examiner's statement of reasons for allowance:

The instant claims are to a primary alkaline cell comprising a negative and a positive terminal, and an outer housing having a pair of opposing flat sides running along a portion of the length of said housing; said housing having a closed end and opposing open end and said housing not having any integral cylindrical sections; said cell further comprising an anode comprising zinc and a cathode comprising MnO_2 within said housing, a separator between said anode and cathode, and an end cap assembly sealing the open end of said housing; wherein the cathode comprises at least one cathode slab having an opening defined therethrough devoid of cathode material, with at least a portion of the outer surface of said cathode contacting the inside surface of said housing anode and cathode, said end cap assembly sealing the open end of said housing thereby forming a boundary surface around the cell interior; wherein the cathode comprises a plurality of rectangular shaped cathode slabs; wherein each of said slabs has a central opening devoid of cathode material; wherein said cathode slabs are stacked within the housing along the cell's central longitudinal axis so that said openings devoid of cathode material form a central core along said longitudinal axis, with the outer surface of said cathode contacting the inside surface of said housing; wherein said cell comprises a vent mechanism located on said boundary surface, wherein said vent mechanism activates to release gas pressure from within the

cell as said gas pressure rises, said vent mechanism comprising a first rupture zone comprising a groove on said boundary surface, said groove defining an underlying material region thinner than the average thickness of said boundary; and a second rupture zone forms a weld on said boundary surface, wherein the first zone ruptures when gas pressure within the cell rises to a first: pressure level and said second zone ruptures when gas pressure within the cell rises to a second pressure level being higher than said first pressure level allowing gas from within the cell to escape from the cell interior through said ruptures; wherein the cell is balanced so that the cathode is in excess such that the ratio of theoretical capacity of the MnO_2 based on a theoretical specific value of 370 mAmp-hr per gram MnO_2, divided by the mAmp-hr capacity of zinc based on a theoretical specific value of 820 mAmp-hr per gram zinc, is between about 1.2 and 2.0.

The most pertinent prior art has been addressed and includes applicant's prior art discussed throughout the prosecution of this application. In addition, Kelemen et al. (US 6,081,992) teaches a primary alkaline cell comprising a zinc anode, a manganese dioxide cathode, an aqueous potassium hydroxide electrolyte, negative and a positive terminals, an outer housing including an open end and an opposing closed end and having a pair of opposing flat sides running along a portion of the length of the housing and an end cap assembly sealing the open end of the housing The casing has a cuboid shape and includes a cover with an aperture. An end cap assembly having an end plate, an insulating seal and an elongated conductive member for the anode are noted. The cathode comprises at least one cathode slab having an opening defined there through devoid of cathode material with at least a portion of the outer surface of the cathode contacting the inside surface of the housing.

The Kelemen reference does not teach the cell has a vent mechanism located on the boundary surface, wherein the vent mechanism activates to release gas pressure from within the cell as said gas pressure rises, said vent mechanism comprising a first and a second rupture zone on the boundary surface wherein the rupture zones have a property that the first zone ruptures when gas pressure within the cell rises to a first pressure level and said second zone ruptures when gas pressure within the cell rises to a second pressure level being higher than said first pressure level allowing gas to escape from the cell interior through said ruptures. Further, Kelemen et al. (US 6,081,992) does not teach a rectangular end plate forming the negative terminal, the cell includes asphalt as a sealant or that the insulating members are plastic or paper.

In addition, Shkuratoff (CA 2,165,152) teaches a safety vent for sealed prismatic batteries. The safety vent may be applied to any wall of the prismatic battery. The pressure that the vent releases is dependent on the material of the casing and the desired release pressure. Pressures of 150 to 250, 300 and 400 are noted. Grooves are noted in the boundary surface. Grooves may be prepared by etching or stamping. The grooves have a smaller thickness than the battery casing. The casing may have dimensions of 7.8 x 34 x 48 mm. Wall thickness of the battery was 0.5 mm for the walls and 0.25 for the cover. Shkuratoff (CA 2,165,152) does not teach the battery configuration claimed including a cathode that comprises a plurality of rectangular shaped cathode slabs wherein each of said slabs has a central opening devoid of cathode material stacked within the housing along the cell's central longitudinal axis so that said openings devoid of cathode material form a central core along said longitudinal axis with the outer surface of said cathode contacting the inside surface of said housing. The reference is silent to balancing the cell so that the cathode is in excess such that the ratio of theoretical

capacity of the MnO_2 based on a theoretical specific value of 370 mAmp-hr per gram MnO_2, divided by the mAmp-hr capacity of zinc based on a theoretical specific value of 820 mAmp-hr per gram zinc, is between about 1.2 and 2.0.

Further, Takashi (JP 09-259,842) teaches a sealed rectangular battery comprising a rectangular case and a rectangular cover defining the interior of the battery. A self-recovering, rupturable safety valve is taught in the cover for preventing an internal pressure rise. Further, a second rupturable vent structure is located where the cover is welded to the battery case. When internal gas exceeds a desired pressure, the case is broken and the battery is vented. The safety valve is set to a lower pressure than the welded vent structure. Takashi (JP 09-259,842) teaches does not teach the battery configuration claimed including a cathode that comprises a plurality of rectangular shaped cathode slabs wherein each of said slabs has a central opening devoid of cathode material stacked within the housing along the cell's central longitudinal axis so that said openings devoid of cathode material form a central core along said longitudinal axis with the outer surface of said cathode contacting the inside surface of said housing. The reference is silent to balancing the cell so that the cathode is in excess such that the ratio of theoretical capacity of the MnO_2 based on a theoretical specific value of 370 mAmp-hr per gram MnO_2, divided by the mAmp-hr capacity of zinc based on a theoretical specific value of 820 mAmp-hr per gram zinc, is between about 1.2 and 2.0. For these reasons, the claims are allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky
Primary Patent Examiner
Art Unit 1745

9/7/2007